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Our ref: KOY-18

Client's ref: F0973-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of: N. SASA : Art Unit: 1712  
Appln. No. : 10/774,733 :  
Filed : February 9, 2004 : Examiner: R. E. Sellers  
Title : ACTIVE ENERGY RAY :  
CURABLE COMPOSITION  
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DECLARATION

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

S i r:

I, Nobumasa Sasa, hereby declare and state as follows:

1. I am the named Inventor in this Application.
2. I received a Masters Degree in Technology in March of 1976 from Chiba University of Chiba, Japan. Since April of 1996, I have been employed by Konica Corporation, now Konica Minolta Medical & Graphic, Inc. owner of this Application. Since my employment with Konica, I have been engaged in research

and study of photosensitive materials in the research and development laboratory of the Company. I am familiar with the subject matter of this Application.

3. I am aware that this Application has been rejected based on European Patent No. 118748 and U.S. Patent Publication No. 2004/0242839 (Takai). I have read both EP '748 and Takai and have performed tests which are reported herein to demonstrate the difference between the composition made in accordance with this Application having methyl groups located at the root of the epoxy group of each oxirane ring compared to epoxy compounds such as the ones taught in EP '748 and Takai, without a methyl group at the root of each oxirane ring. The tests, as reported herein, were performed by me or under my direct supervision and control.

4. I chose Epoxy 1 (3,4-epoxycyclohexylmethyl-3-4-epoxycyclohexane carboxylate) and Epoxy 2 (bis(3,4-epoxycyclohexylmethyl)adipate), as recited on page 15 of EP '748, as typical compounds that fall within the teachings of EP '748 and Takai wherein no methyl group is present at the root of the oxirane ring. I then used each of these two epoxy compounds in a formulation identical to Composition No. 1 as recited in Table 3 on page 72 of this Application except that I replaced

epoxy, Example Compound Example No. 9, with an equal amount of Epoxy 1 and Epoxy 2. I then followed the procedure of Example 2, as recited on page 69, to make the active energy ray curable compositions containing Epoxy 1 and Epoxy 2.

5. In order to evaluate the compositions containing Epoxy 1 and Epoxy 2, I employed the test procedures of Example 2 as outlined on pages 73-76 of this Application. It will be noted that the curing method that followed for the composition that contained Epoxy 1 and Epoxy 2 was method Nos. 3 and 4, respectively. These cure methods are recited on pages 74 and 75 of the Application. Both of these compositions were tested in accordance with the procedures outlined on pages 73-76 of this Application and are reported in the Table attached hereto.

6. I also confirm that Compositions 1 through 10, as reported in Table 3 on page 72 of the Application, were made, tested and the test results are those as reported in Table 4 on page 77 in the Application. Thus, it is fair to compare the test values attained for Compositions 1 through 5, the Inventive Test Compositions, with the results obtained for the compositions containing Epoxy 1 and Epoxy 2 as reported herein.

7. As can be seen by the data in the Table attached hereto, the compositions that contained Epoxy 1 and Epoxy 2 were inferior to curable compositions that fall within the present Invention.

8. With respect to safety, compositions that contained Epoxy 1 and Epoxy 2 showed the raising of welts or bulla upon exposure to the skin and the compositions that contain Epoxy 1 and Epoxy 2 resulted in redness of the skin upon contact with the skin. This can be directly compared to compositions made in accordance with the present Invention, namely, Compositions 1 through 5 and their Epoxies which, in Table 4 on page 77 of this Application, showed nearly no change when coming into contact with the skin.

9. With respect to stability, it can be seen that the compositions that contained Epoxy 1 and Epoxy 2 had an occurrence of precipitates. This can be compared to the epoxy compositions of the present Invention as reported in Table 4 which had no occurrence of precipitation. As noted, the stability was taken after storage of the composition for one month at 25°C.

10. With respect to the curability, it can be seen that the amount of energy necessary in order to cure the compositions that contained Epoxy 1 and Epoxy 2 to have a non-tacky sensation to a finger, was on the order of 200 to 1,000. This can be compared directly to the compositions made in accordance with the present Invention, Compositions 1 through 5, as reported in Table 4, which employed energies in the range of 30 to 100.

11. With respect to film strength, it can be seen that the compositions that contain Epoxy 1 and Epoxy 2 peeled slightly upon strong scratching. This can be compared to the composition made in accordance with the present Invention, Compositions 1-5 on Table 4, which showed no peeling even when scratched.

12. With respect to solvent resistance, it can be seen that compositions that contain Epoxy 1 and Epoxy 2, had breaking and shrinkage when immersed in a solvent (alcohol, ethanol). With respect to the present Invention, it can be seen that Compositions 1 through 5, reported in Table 4, showed no change.

13. Thus, it can be seen that the compositions that contained Epoxy 1 and Epoxy 2 were far inferior to the Compositions 1-5 as recited in Table 4 of the present Invention.

14. I find the results, as reported in the Table, to be surprising and unexpected because, as one of skill in the art, I would not expect the fact that methyl groups present at the root of each of the epoxy compounds to result in such a vast improvement based on the teachings of both Takei and EP '748, both of which I have read and both of which I fully understand.

15. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 USC 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Nobumasa Sasa  
Nobumasa Sasa

Dated: This 27<sup>th</sup> day of September, 2006.

DCL/mr

Encl: Table 3

## BEST AVAILABLE COPY

Epoxy Compound	Safety		Stability	Curing Method No.	Curability			Film Strength	Solvent Resistance	Durability
	Epoxy Compound	Composition			25°C, 45% RH	25°C, 85% RH	35°C, 85% RH			
EP 748 Epoxy 1	C	B	C	3	200	500	1000	B	C	B
EP 748 Epoxy 2	C	B	C	4	200	500	1000	B	C	B